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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/518,769

12/21/2004

Isao Ota

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OLIFF & BERRIDGE, PLC

P.O. BOX 320850

ALEXANDRIA, VA 22320-4850

EXAMINER

MILLER, BENA B

ART UNIT

PAPER NUMBER

3725

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/518,769	<b>Applicant(s)</b> OTA ET AL.	
	<b>Examiner</b> Bena Miller	<b>Art Unit</b> 3725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/01/05</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of claims 1-10 in the reply filed on 02/21/01 is acknowledged.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 1 provides for the use of a milling cerium compound by means of a ball mill, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 1 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are the steps to using a milling medium.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-10 set forth a range for the critical rotational speed ( $N_c$ ) of a ball mill container. However, these claims do not set forth the unit of measurement that is used to express this critical rotational speed; therefore, it is impossible to determine the speed on the basis of the disclosures.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 7, as best as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Applicant's Admitted Prior Art (hereinafter, AAPA).

Applicant's Admitted Prior Art reads on the limitations of claim 1. AAPA discloses on page 1 of the specification of the claimed invention, a ball mill milling equipment includes a dimension (radius  $r$ ) and rotational speed rpm in regards to the

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ball mill container wherein the amount of beads filled is expressed in a ratio of  $H_b/r$  of depth  $H_b$  of the filled beads to the radius of the ball mill container. The disclosed specification further discloses the best milling efficiency is obtained when the amount of filled beads are expressed in  $H_b/r$  is 1.0 wherein this expression corresponds to 50% based on the internal volume of the ball mill container. It should also be noted in par. 008 of page 2 of the disclosed specification, the rotational speed  $N_c = (203 - 0.690r)r^{1/2}$  is an ideal state in the milling by a ball mill.

Regarding claim 7, AAPA further teaches the diameter of the milling medium is 10.2mm. See par. 0009 of page 2 of the disclosed invention.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter, AAPA).

AAPA teaches most of the elements of the claimed invention except for the rotational speed which is 10% or more of  $N_c$  and the radius  $r$  of the ball mill container is 5 to 50 cm. It would have been obvious to one of ordinary skill in the art to have the rotational speed of the ball mill container of AAPA 10% or more of  $N_c$  for the purpose of maximizing milling efficiencies. Further, it would have been obvious to one of ordinary

skill in the art at the time the invention was made to have the container of the ball mill of AAPA 5 to 50 cm for the purpose of maximizing milling efficiencies.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter, AAPA) in view of Benjamin (US Patent 3,591,362).

AAPA teaches most of the elements of the claimed invention except for the milling of cerium compound carried out in a dry process. Benjamin teaches a process for producing powdery constituents using an agitation mill wherein a dry process is used to mill cerium compound (col. 5, line 15; col. 10, par. 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the step, noted above, and as suggested by Benjamin in the method of AAPA for the purpose of producing a powdery constituent.

Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter, AAPA) in view of Blanton et al (US Patent 6,491,239).

AAPA teaches most of the elements of the claimed invention except for the use of zirconia ball milling medium. Blanton et al teaches that it is well known to use zirconia ball as a milling medium for a ball mill (col., par. 5). It would have been obvious to one of ordinary skill in the art to use a zirconia ball milling medium as suggested by Blanton et al in the method of AAPA for the purpose of maximizing milling efficiencies.

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter, AAPA) in view of Hughes (US Patent 3,337,300).

AAPA teaches most of the elements of the claimed invention except for water soluble alkaline silicate added. Hughes teaches the process of reducing the particle size of a compound using milling wherein a water soluble alkaline silicate such as sodium silicate (col. 3, par. 3 and 6). It would have been obvious to one of ordinary skill in the art to add a water soluble alkaline silicate such as sodium silicate as suggested by Hughes in the method of AAPA for the purpose of maximizing milling efficiencies.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bena Miller whose telephone number is 571.272.4427. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derris Banks can be reached on 571-272-4419. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bena Miller/  
Primary Examiner, Art Unit 3725  
May 11, 2008